

IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please CANCEL claims 9, 13, 15 and 29 and AMEND claims 1-8, 10-12, 14, 16, 17 and 20-28 in accordance with the following:

1. (currently amended) A file replication system having a plurality of nodes connected to a network, ~~shared-files~~ being distributed to the nodes, wherein

a first node of the nodes comprises:

a first token managing portion ~~asking a second node of the nodes for an giving~~ access permission for a ~~shared-file~~ when within the first node when no other node has update permission and otherwise issuing a notification of a permitted node that has update permission for the file in response to an access request ~~takes place in the first node, and~~

an IO request intercepting portion accepting an access to ~~a shared-the~~ file, the access taking place in the first node ~~itself~~ when said IO request intercepting portion is capable of acquiring the access permission, asking said first token managing portion to acquire the access permission against the access request, and asking ~~a-the permitted~~ node that has an update permission for the ~~shared-file~~ to access to the ~~shared-file~~ when said first token managing portion is not capable of acquiring the access permission, and

a second node comprises a second token managing portion notifying a requesting node that requests ~~an-the~~ access permission for ~~a shared-the~~ file of ~~a-the permitted~~ node that has ~~an the~~ update permission for the ~~shared-file~~ as a response message ~~when another node has an update permission for the shared file.~~

2. (currently amended) A node, connected to ~~another-at least one other~~ node through a network, ~~having a file shared with a every~~ node having a copy of files synchronized with files of other nodes for high availability and high performance to provide a replicated file system, comprising:

a token managing portion managing an access request for a ~~shared-file~~; and

an IO request intercepting portion asking said token managing portion to acquire access permission for the ~~shared-file~~ against an access request to the ~~shared-file~~ in a said node itself, wherein-said token managing portion notifies-giving access permission when no other node has update permission for the file and said token managing portion notifying said IO request intercepting portion of a-another node that has an-the update permission when the other node has the update permission for the file, in response to the access request of said IO request intercepting portion, said IO request intercepting portion accessing the file in said node when the IO request intercepting portion is capable of acquiring the access permission and said IO request intercepting portion ~~asks-said-asking the other~~ node that has the update permission to access the ~~shared-file~~ instead of accessing the file in said node when said IO request intercepting portion is not capable of acquiring the access permission.

3. (currently amended) The node according to claim 2, further comprising:
a system structure managing portion performing a restoration process of data of a ~~shared-file~~ of the node ~~itself~~ when it is newly joined to a system,
wherein while said system structure managing portion is restoring the ~~shared-file~~, when an access request for the ~~shared-file~~ takes place in the node ~~itself~~, said IO request intercepting portion asks another node that shares the ~~shared-file~~ to access the ~~shared-file~~.

4. (currently amended) The node according to claim 2, further comprising:
a changed data notifying portion propagating an updated content of the ~~shared-file~~ to other node along with information that represents a dependent relationship with another update;
and
a received data processing portion reflecting the updated content to the ~~shared-file~~ while assuring an order of the update based on the dependency relationship.

5. (currently amended) The node according to claim 4, further comprising:
a system state information portion storing information about propagation mode of an updated content for each of at least one ~~shared-file~~,
wherein said changed data notifying portion propagates the update content based on information queued in said system information portion.

6. (currently amended) The node according to claim 5, wherein the propagation mode is one of a synchronous mode in which it is assured that the updated content is propagated to all the nodes that share the ~~shared~~-file, a semi-synchronous mode in which it is assured that the updated content is propagated to the majority of nodes that share the ~~shared~~-file, and an asynchronous mode in which it is not acknowledged that the updated content is propagated to the nodes that share the ~~shared~~-file.

7. (currently amended) The node according to claim 4, wherein said system state information storing portion keeps information about each node that shares at least one ~~shared~~ file for each ~~shared~~-file.

8. (currently amended) A node, connected to ~~another~~ at least one other node through a network, having a file shared with a every node having a copy of files synchronized with files of other nodes for high availability and high performance to provide a replicated file system, comprising:

a token managing portion asking another node to acquire an access permission for a ~~shared~~-file against an access request for the ~~shared~~-file in the said node itself; and

an IO request intercepting portion accepting an access request for a ~~shared~~-file in the said node itself, asking said token managing portion to acquire the access permission for the ~~shared~~-file against the access request to the file in said node, said token managing portion giving access permission when no other node has update permission for the file and otherwise notifying said IO request intercepting portion of another node that has the update permission for the file, said IO request intercepting portion accessing the file in said node when the IO request intercepting portion is capable of acquiring the access permission and asking a the other node that has an the update permission for the shared-file to access the shared-file according to the access request instead of accessing the file in said node when said token managing portion is not capable of acquiring the access permission for the shared-file.

9. (cancelled)

10. (currently amended) A file replication system having a plurality of nodes connected to a network, ~~shared files~~ being distributed to the nodes, wherein

a first node of the nodes comprises:

first token managing means for ~~asking a second node of the nodes for an giving~~ access permission for a ~~shared file~~ when within the first node when no other node has update permission and otherwise issuing a notification of a permitted node that has update permission for the file in response to an access request takes place in the first node, and

IO request intercepting means for accepting an access to ~~a shared the~~ file, the access taking place in the first node ~~itself~~ when said IO request intercepting portion is capable of acquiring the access permission, asking said first token managing means to acquire the access permission against the access request, and asking ~~a the permitted~~ node that has ~~an update~~ permission for the ~~shared file~~ to access to the ~~shared file~~ when said first token managing means is not capable of acquiring the access permission, and

a second node comprises ~~[:]~~ second token managing means for notifying a requesting node that requests ~~an the~~ access permission for ~~a shared the~~ file of ~~a the permitted~~ node that has ~~an the~~ update permission for the ~~shared file~~ as a response message ~~when another node has an update permission for the shared file~~.

11. (currently amended) A node, connected to ~~another at least one other~~ node through a network, ~~having a file shared with a every node having a copy of files synchronized with files of other nodes for high availability and high performance to provide a replicated file system~~, comprising:

token managing means for managing an access request for a ~~shared file~~; and

IO request intercepting means for asking said token managing means to acquire an access permission for the ~~shared file~~ in response to an access request to the ~~shared file~~ in the said node itself, wherein said token managing means notifies giving access permission when no other node has update permission for the file and said token managing portion notifying said IO request intercepting means of a another node that has an the update permission when the other node has the update permission for the file, in response to the access request of said IO request intercepting means, said IO request intercepting portion accessing the file in said node when the IO request intercepting portion is capable of acquiring the access permission and said IO request intercepting means asks asking the other node that has the update permission to access the ~~shared file~~ instead of accessing the file in said node when said IO request intercepting means is not capable of acquiring the access permission.

12. (currently amended) A node, connected to ~~another~~ at least one other node through a network, ~~having a file shared with the every node~~ having a copy of files synchronized with files of other nodes for high availability and high performance to provide a replicated file system, comprising:

token managing means for asking another node to acquire an access permission for a ~~shared-file~~ against an access request for the ~~shared-file~~ in the ~~said node itself~~; and

IO request intercepting means for accepting an access request for a ~~shared-file~~ in the ~~said node itself~~, asking said token managing means to acquire the access permission for the ~~shared-file~~ against the access request to the file in said node, said token managing portion giving access permission when no other node has update permission for the file and otherwise notifying said IO request intercepting portion of another node that has the update permission for the file, said IO request intercepting portion accessing the file in said node when the IO request intercepting portion is capable of acquiring the access permission and asking ~~a the other~~ node that has ~~an the~~ update permission for the ~~shared-file~~ to access the ~~shared-file~~ according to the access request instead of accessing the file in said node when said token managing means is not capable of acquiring the access permission for the ~~shared-file~~.

13. (cancelled)

14. (currently amended) A file replication control method for a system having a plurality of nodes connected to a network, ~~each node sharing a file~~ files being distributed to the nodes, comprising:

causing an access requesting node to access a ~~shared-file~~ of the access requesting node itself when the access requesting node has the latest data of ~~a shared the file~~ and has or is able to obtain access permission from another node having update permission for the file; and

asking ~~another the other~~ node to access the ~~shared-file~~ when the other node has the ~~latest data~~ update permission for the file which is given to only one node at a time.

15. (cancelled)

16. (currently amended) The file replication control method according to claim ~~15~~ 14, wherein the other node that has the update permission releases the update permission after an

update that has a dependent relationship with the update performed at the other node has been propagated to all the nodes.

17. (currently amended) The file replication control method according to claim ~~15~~ 14, wherein said method further comprises:

the other node that has updated the ~~shared~~-file asynchronously propagating an updated content to the other nodes; and

causing the other node that has updated the ~~shared~~-file to process an access request that takes place in the access requesting node while the updated content is being propagated.

18. (original) The file replication control method according to claim 17, wherein the updated content is reflected in such a manner that order thereof is assured.

19. (original) The file replication control method according to claim 18, wherein a dependency information that represents order of other updates to be propagated to the other node along with the updated content.

20. (currently amended) The file replication control method according to claim 19, wherein a node that has received the updated content to reflect the updated content on a ~~shared~~ file of the node itself after receiving a previous updated content based on the dependency information.

21. (currently amended) The file replication control method according to claim 14, wherein a propagation mode of an updated content is designated for each of at least one ~~shared~~ file.

22. (currently amended) The file replication control method according to claim 14, wherein a node to which an updated content is propagated is designated for each of at least one ~~shared~~-file.

23. (currently amended) The file replication control method according to claim 14, further comprising:

restoring data of a ~~shared~~-file of a newly joined node; and

operating a user program before data of the ~~shared~~-file is completely restored.

24. (currently amended) The file replication control method according to claim 23, wherein restored data is transmitted in such a manner that order of update requests for the ~~shared-file~~ is assured.

25. (currently amended) The file replication control method according to claim 23, wherein the node asks another node that shares the ~~shared-file~~ to perform a process for an access request for the ~~shared-file~~ when the access request takes place in the node itself before data is completely restored.

26. (currently amended) The file replication control method according to claim 14, wherein a node that has performed a systematic stop in which nodes that share a file are synchronously stopped to store a systematic stop state and the node synchronously resumes a process for the ~~shared-file~~ without restoring data of the ~~shared-file~~.

27. (currently amended) A file replication method for a system having a plurality of nodes connected to a network, comprising:

- causing a first node to request a token for accessing a file;
- notifying the first node of a second node that has the token when the first node is not capable of acquiring the token; and
- causing the first node to ask the second node to access the file when the first node is notified that the first node is not capable of acquiring the token.

28. (currently amended) A computer-readable portable storage medium, when being used by a computer that composes a node connected to other nodes through a network in a file replication system, on which is recorded a program for causing the computer to execute a process, said process comprising:

- when the node accesses a ~~shared-file~~ and a node itself has the latest data of the ~~shared file~~ and has or is able to obtain access permission from another node having update permission for the file, causing the node itself to access the ~~shared-file~~ of the node itself; and
- when another node has the ~~latest data~~ update permission for the file which is given to only one node at a time, causing the node itself to ask the other node to access the ~~shared-file~~.

29. (cancelled)